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SAN FRANCISCO EARTHQUAKE OF MARCH 22, 1957

At about 11:45 on the morning of Friday, March 22, 1957, San Francisco and the Bay area experienced the strongest shock since the great earthquake of 1906. Actually, the energy involved and the damage resulting from the earthquake of 1906 were vastly greater, but the 1957 shock was sufficiently violent to make most people of the Bay cities acutely aware that a sharp earthquake had occurred. For a whole new generation of the local population it was the greatest earthquake they had experienced. No lives were lost, there were no serious injuries, and structural damage to homes was slight, although a large number of homes in the Westlake-Palisades-Daly City area suffered more or less superficial damage. On the modified Mercali intensity scale, which is a measure of the violence of shaking based on destruction produced by the ground waves, intensity VII (on a I to XII scale) was probably reached at some points in San Francisco. The Richter magnitude of 5.3 for this earthquake was computed from the seismograph records, and is a figure related to total energy of the earthquake liberated as seismic waves. Magnitude does not vary from point to point, but is a constant for a given earthquake. Magnitude of the 1906 earthquake, computed at 8.25, shows that the total energy involved in earth movements in the 1906 earthquake was enormously greater than the energy of the 1957 shock.

The most spectacular and interesting effects of the March 22 earthquake were visible along State Highway 1 between the southern city boundary of San Francisco and Mussel Rock, closing the road for about two weeks. The largest slide originated high on the steep slope east of the highway a few hours after the main shock and brought loosely consolidated sandstone and sand entirely across the road and down to the beach. Other damage on Highway 1 was extensive cracking along the seaward shoulder of the pavement, usually nearly parallel to the pavement edge. At Lake Merced, low, but steep, embankments around the southern margins of the lake crumbled into the lake, taking sections of road pavement and a paved path along with the unconsolidated soil and fill on which the pavement was laid. The greatest building damage was to homes in the Westlake Palisades tract of Daly City but damage was generally confined to exterior plaster. Building damage in the city of San Francisco was minor. Total damage of all types resulting from the earthquake probably does not exceed $1,000,000.

Causes of earthquakes

Earthquakes are vibrations transmitted as waves in the materials of the earth and so may originate from landslides, volcanic activity, explosions and any abrupt movements of masses of rocks. Nearly all destructive earthquakes have been the result of sudden movements of blocks of the earth's crust along breaks called "faults." Rock, which makes up the material of the earth, is elastic and may yield to stresses by slow creep over long periods of time. When the elastic limit of the rock is exceeded at any point, or friction along an old fault surface is overcome, an abrupt movement may take place causing an earthquake. The underlying reasons for accumulation of stresses in rocks of the outer part of the earth are little understood; however, such stresses and rock displacements are most frequent along the unstable margins of continental platforms and the ocean deeps. One such belt on the earth that is particularly active is the margin of the